

Application No. 09/370,601

2. An irrigation ablation probe comprising:
a generally rigid probe body having proximal and distal ends and comprising an ablation electrode at its distal end, wherein the ablation electrode defines an inner cavity, the ablation electrode having at least one irrigation opening through which fluid can pass from the inner cavity to the outside of the ablation electrode;

means for introducing fluid into the inner cavity; and

a handle mounted at the proximal end of the probe body, the handle comprising a housing having a generally open interior.

3. An irrigation probe according to claim 2, wherein the ablation electrode has proximal and distal ends, wherein the distal end of the electrode is exposed at the distal end of the probe body and the proximal end extends into the handle.

4. An irrigation ablation probe according to claim 2, wherein the means for introducing fluid comprises an infusion tube attached to the proximal end of the ablation electrode.

5. An irrigation ablation probe according to claim 2, wherein the generally rigid probe body comprises a malleable material.

6. An irrigation ablation probe comprising:

a generally rigid probe body having proximal and distal ends and comprising an ablation electrode at its distal end, the ablation electrode having at least one irrigation opening through which fluid can pass to the outside of the ablation electrode;

a handle mounted to the proximal end of the probe body, the handle comprising a housing having a generally open interior; and

an infusion tube having proximal and distal ends and extending through the probe body for introducing fluid into the ablation electrode, the distal end of the infusion tube being attached to the ablation electrode.

7. An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

a tubular electrode having proximal and distal ends, wherein the tubular electrode forms the infusion tube; and

a non-conductive sheath covering a portion of the tubular electrode.

8. An irrigation ablation probe according to claim 7, wherein the tubular electrode is made of stainless steel.

9. An irrigation ablation probe according to claim 8, wherein the tubular electrode has an inner diameter ranging from about 0.40 inch to about 0.80 inch and an outer diameter ranging from about 0.50 inch to about 0.90 inch.

10. An irrigation ablation probe according to claim 7, wherein the tubular electrode has an outer diameter ranging from about 0.50 inch to about 0.70 inch.

11. An irrigation ablation probe according to claim 7, wherein the tubular electrode has an inner diameter ranging from about 0.40 inch to about 0.60 inch.

12. An irrigation ablation probe according to claim 7, wherein the distal end of the tubular electrode comprises an exposed region that is not covered by the non-conductive sheath.

13. An irrigation ablation probe according to claim 7, wherein the tubular electrode is made of a malleable material.

14. An irrigation ablation probe according to claim 7, wherein the proximal end of the tubular electrode is mounted in the handle.

15. An irrigation ablation probe according to claim 7, further comprising a flexible plastic tubing attached to the proximal end of the tubular electrode for introducing fluid into the tubular electrode.
16. An irrigation ablation probe according to claim 15, wherein the flexible plastic tubing is attached to the proximal end of the tubular electrode within the handle.
17. An irrigation ablation probe according to claim 7, wherein the distal end of the tubular electrode is bent at an angle α greater than 0° .
18. An irrigation probe according to claim 7, wherein the at least one irrigation opening is located on the surface of the tubular electrode to be in contact with the tissue to be ablated.
19. An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.
20. An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 5 inches to about 10 inches.
21. An irrigation probe according to claim 7, wherein the probe body has a length ranging from about 7 inches to about 8 inches.
22. An irrigation probe according to claim 12, wherein the exposed region of the tubular electrode has a length ranging from about 0.50 inch to about 1.5 inches.
23. An irrigation probe according to claim 12, wherein the exposed region of the tubular electrode has a length ranging from about 0.75 inch to about 1.25 inches.
24. An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

tubing having proximal and distal ends and at least one lumen extending therethrough, wherein the ablation electrode is mounted at the distal end of the tubing; and

a stiffening wire extending through one of the at least one lumens of the tubing.

25. An irrigation ablation probe according to claim 24, wherein the infusion tube extends through one of the at least one lumens of the tubing, and wherein the distal end of the infusion tube is in fluid communication with at least one irrigation opening in the ablation electrode.

26. (Twice Amended) An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

tubing having proximal and distal ends and at least one lumen extending therethrough; wherein the ablation electrode is mounted at the distal end of the tubing;

wherein the infusion tube extends through one of the at least one lumens of the tubing, and wherein the distal end of the infusion tube is in fluid communication with the at least one irrigation opening in the ablation electrode; and

a stiffening wire extending through one of the at least one lumens of the tubing.

27. An irrigation ablation probe according to claim 26, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.

28. An irrigation probe according to claim 26, wherein the probe body has a length ranging from about 5 inches to about 10 inches.

29. An irrigation probe according to claim 26, wherein the probe body has a length ranging from about 7 inches to about 8 inches.

30. An irrigation ablation probe according to claim 6, wherein the generally rigid probe body comprises:

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tubing having proximal and distal ends and first and second lumens extending therethrough; wherein the ablation electrode is mounted at the distal end of the tubing;

wherein the infusion tube extends through the first lumen of the tubing, and wherein the distal end of the infusion tube is in fluid communication with the at least one irrigation opening in the ablation electrode; and

a stiffening wire having proximal and distal ends that extends through the second lumen of the tubing.

31. An irrigation probe according to claim 30, wherein the stiffening wire is made of stainless steel.

32. An irrigation ablation probe according to claim 30, wherein the stiffening wire is made of a malleable material.

33. An irrigation ablation probe according to claim 30, wherein the at least one irrigation opening comprises a longitudinal passage extending out the distal end of the tip electrode.

34. An irrigation ablation probe according to claim 30, wherein the at least one irrigation opening comprises at least one transverse passage.

35. An irrigation ablation probe according to claim 30, wherein the tip electrode is porous.

36. An irrigation ablation probe according to claim 30, further comprising a temperature sensing means mounted in a blind hole in the tip electrode.

37. An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 3.5 inches to about 12 inches.

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38. An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 5 inches to about 10 inches.

39. An irrigation probe according to claim 30, wherein the probe body has a length ranging from about 7 inches to about 8 inches.

40. An irrigation ablation probe comprising:
a generally rigid probe body having proximal and distal ends and comprising an ablation electrode at its distal end, wherein the generally rigid probe body comprises a malleable material; and
a handle mounted to the proximal end of the probe body.

41. A method for treating atrial fibrillation in a patient comprising:
opening the heart of the patient; and
ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 2.

42. An irrigation ablation probe according to claim 2, wherein the means for introducing fluid into the inner cavity comprises an infusion tube having proximal and distal ends and extending through the probe body.

43. An irrigation probe according to claim 42, wherein the infusion tube and the ablation electrode together comprise a single generally hollow body.

44. An irrigation probe according to claim 6, wherein the infusion tube and the ablation electrode together comprise a single generally hollow body.

45. A method for treating atrial fibrillation in a patient comprising:
opening the heart of the patient; and
ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 6.

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46. A method for treating atrial fibrillation in a patient comprising:
opening the heart of the patient; and
ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 26.

47. A method for treating atrial fibrillation in a patient comprising:
opening the heart of the patient; and
ablating at least one linear lesion in the heart tissue using an irrigation probe as recited in claim 44.

48. (New) An irrigation probe according to claim 2, wherein the ablation electrode has an exposed surface that is conductive around a full circumference of the exposed surface.

49. (New) An irrigation probe according to claim 6, wherein the ablation electrode has an exposed surface that is conductive around a full circumference of the exposed surface.

50. (New) An irrigation probe according to claim 40, wherein the ablation electrode has an exposed surface that is conductive around a full circumference of the exposed surface.

51. (New) An irrigation probe according to claim 48, wherein substantially the entire exposed surface of the ablation electrode is conductive.

52. (New) An irrigation probe according to claim 49, wherein substantially the entire exposed surface of the ablation electrode is conductive.

53. (New) An irrigation probe according to claim 50, wherein substantially the entire exposed surface of the ablation electrode is conductive.

REMARKS

Claims 2 to 53 are pending, with claims 24 to 47 withdrawn from consideration as directed to a non-elected invention. Applicant has amended claim 26 to correct a typographical error. Attached hereto is a